



Using Stage of Change Criteria to Increase Vegetable Intake Among WIC Children

This project has been funded in part
with Federal funds from the
U.S. Department of Agriculture -- Food and Nutrition Service,
under the FY2001 WIC Special Project Grants.

U.S. children don't eat enough vegetables

- 2-11 year olds eat 2 servings/day
 - 1/4 eat <1 serving/day
 - Potatoes account for 1/2 of intake

(1996 CSFII)



Iowa data about adults

- 15% eat 5 servings/day
 - U.S. = 23.6%
 - 1996 BRFSS
- Average 1.7 servings/day
 - 1999 Iowa EFNEP



Pick A Better Snack

- Social marketing campaign
- Replace high-fat, empty calorie snacks with fruits & vegetables



Barriers to serving vegetables

- Inconvenience & time to prepare
- Limited access
- Neophobia
- Fear of food waste
- Confusion over the 5-A-Day message

(Iowa focus group data, 1999)

Messages \neq needs & wants

- Prescriptive approach to nutrition education
 - Based on problems detected in screening
- Practical information
 - Choosing
 - Storing
 - Preparing
- Child feeding tips
 - New foods

Revitalize quality nutrition services

- Focus on what messages are provided
- Change how services are provided by using stages of change & critical thinking skills

Project goals

- Revitalize WIC nutrition services to be:
 - More interactive
 - Client-focused
 - Messages that meet needs & wants
- Improve health of 2-5 year olds by
 - ↑ variety & daily intake of vegetables

Constructs for eating vegetables

- Does the parent offer vegetables?
- Does the child accept the vegetables?
- What is the interaction between the parent and child if vegetables are not accepted?

Screen to identify stage of change

- “Stage” parents’ willingness to offer vegetables
- Adapt a tool validated with young adults
 - USDA regional project NC-219



Stages of Change (Transtheoretical Model or TTM)

■ Stages = *when*

- Precontemplation
- Contemplation
- Preparation
- Action
- Maintenance

■ Processes = *how*

- Consciousness raising
- Dramatic relief
(role-playing)
- Self-reevaluation

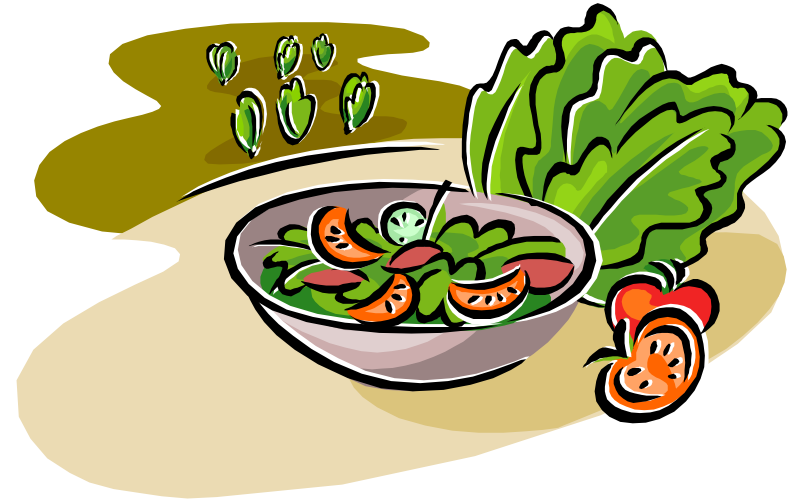
Educate using critical thinking model

- The process of analyzing, synthesizing & evaluating situations before solving everyday problems



Interactive nutrition ed modules

- Role-playing & scenarios
 - Probing questions
 - Food preparation
 - Taste-testing
 - Goal setting
-
- Address stages of change & identified barriers to offering vegetables



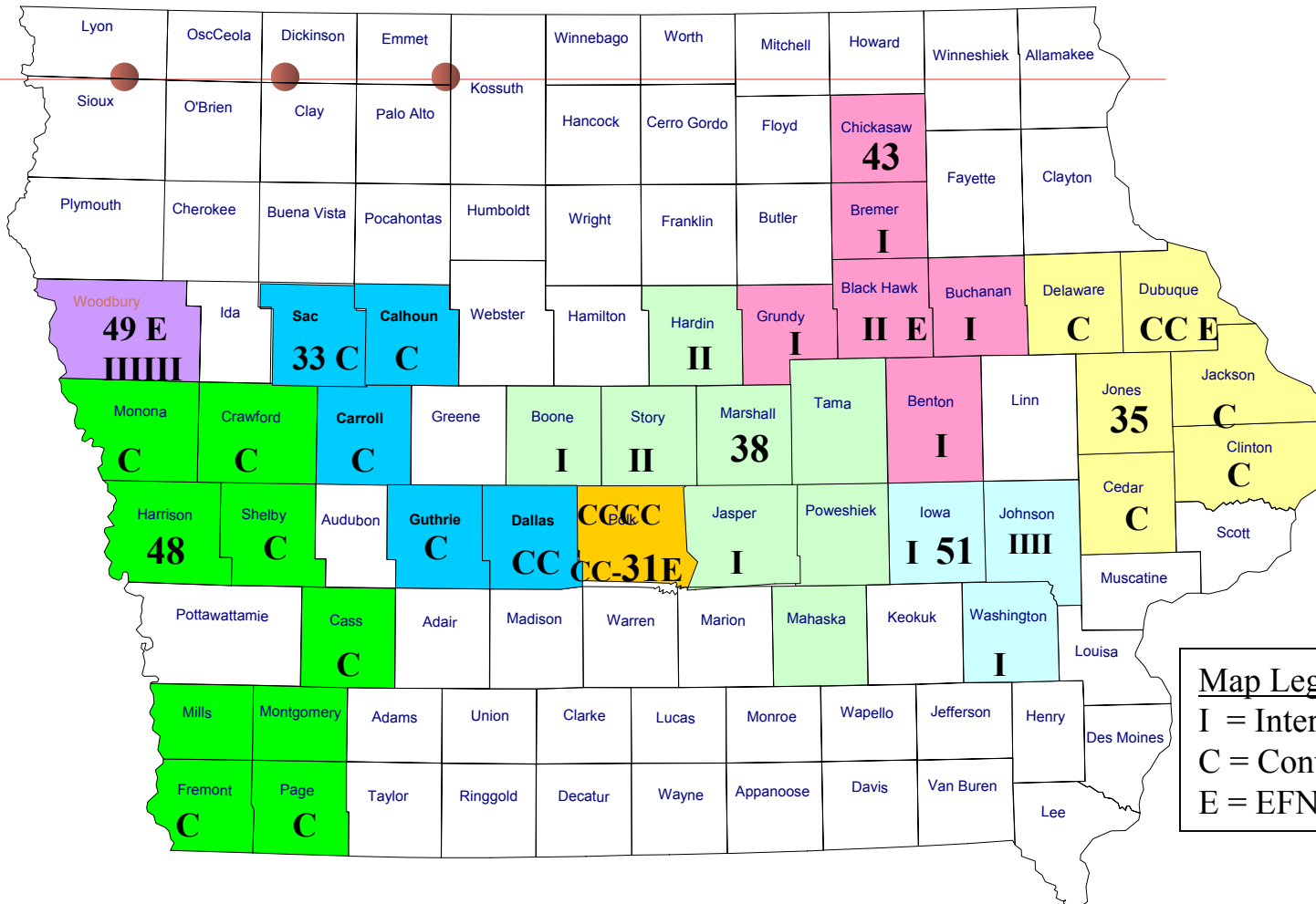
Nutrition ed modules

- Interactive & hands-on
- Easy to display & transport
- Can be used by a variety of people
- “Low tech”
- Print materials & incentives as appropriate
- English & Spanish

Project design

- 6 clinics in each of 4 local agencies
- Randomly selected
- Stratified by presence of EFNEP & Spanish-speaking population ($>10\%$)
- Similar number of controls

Location of intervention & control clinics



Sample size

- Enrollment will be completed in four 6-month waves
- 534 parents of 2-5 year old children will receive intervention services during each wave
- Systematic sampling to account for walk-ins

At the time of certification

- Assess parent's stage of readiness
- Identify parent's barriers
- Provide targeted hands-on nutrition ed
- Schedule second ed contact

Second education contacts

- Provide a hands-on interactive contact at WIC clinic or in the community
- Provided by WIC LD/RD, EFNEP program assistants & others
- Directed to parent; some encounters will involve the child, too

Partnerships are key

- EFNEP
- Iowa Nutrition Education Network
- Community-based nutrition coalitions
- Iowa Dept. of Agriculture



Goals of partnerships

- Consistent & reinforcing messages
- Reduce duplication in services
- Assure effective use of resources
- Coordinate training opportunities
- Mobilize ↑ collaboration across the board

Outcome evaluation

- Parents' knowledge, attitude & practices
- Parents' stage of change
- Children's intake (variety & servings)
- Redemption of FMNP checks
- Analysis of all data
- Analysis of data from children in project for at least 12 months

Summative evaluation



■ Cost-effectiveness

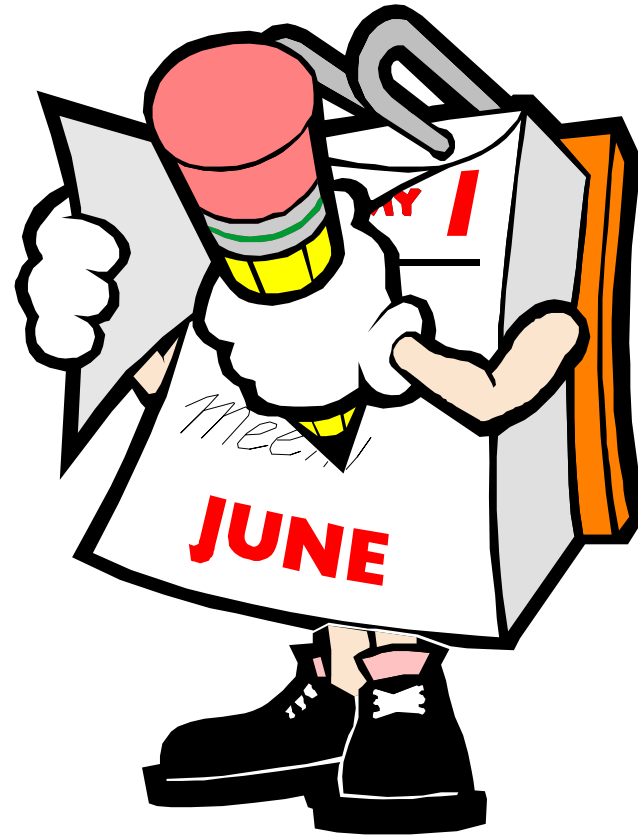
- # of participants to measure recruitment
- % improving intake to measure outcomes

Web-based toolkit

- Staging tool
- Examples of interactive educational activities & supporting materials
- Tip sheets for sharing ideas & strategies for cultivating partnerships

Implementation

- June 15, 2002
- Project will include 3 WIC Farmers' Market seasons



Steering committee

- Brenda Dobson, WIC Nutrition Coordinator
- Judy Solberg, Bureau Chief, Bureau of Nutrition
- Peggy Haafke Martin, Iowa EFNEP Coordinator (formerly Connie Betterley)
- Grace Marquis, Iowa State University
- Mary Jane Oakland, Iowa State University
- Esi Colecraft, Study Coordinator, Iowa State University

Other ISU personnel

- Statistician
- Economist
- Research assistants
 - Nutrition (all 3 years)
 - Economics (years 2-3)

Progress since October 2001

- Intervention training: April 2002
- Data collection training: May 2002
- Printed/distributed nutrition ed modules
- Implementation: June 17, 2002
- Second enrollment cycle:
December 15, 2002



Preliminary Results (Phase 1)



Data sources

- WIC data system
 - Socio-demographic information
 - Child anthropometry
 - Nutrition & health risk indicators

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Stages of change algorithm

Visit date (mm/dd/yy): __/__/__

1. How many times a day do you usually offer vegetables to your child?			
<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3 or more times



2a. Do you intend to start offering your child vegetables at least 3 times a day within the next 30 days to 6 months? <i>If Yes, ask within 30 days or within 6 months</i>		
<input type="checkbox"/> No	<input type="checkbox"/> Yes, within 6 months	<input type="checkbox"/> Yes, within 30 days

2b. Have you been offering your child vegetables at least 3 times a day for more than 6 months?	
<input type="checkbox"/> No	<input type="checkbox"/> Yes

TTM
STAGE:

Pre/Contemplation
PC/C

Preparation
(P)

Action Maintenance
(A/M)



3. What difficulties do you face in providing vegetables for your child?					
Barriers (check all that apply)	Spontaneous responses	Probed responses	Module reference #		
			PC/C	P	A/M
Lack of time	<input type="checkbox"/>	<input type="checkbox"/>			
Inconvenience	<input type="checkbox"/>	<input type="checkbox"/>			
Don't know how to prepare	<input type="checkbox"/>	<input type="checkbox"/>			
Child doesn't like them	<input type="checkbox"/>	<input type="checkbox"/>			
Don't know about child benefits	<input type="checkbox"/>	<input type="checkbox"/>			
Don't have a way to get vegetables	<input type="checkbox"/>	<input type="checkbox"/>			
Too Expensive	<input type="checkbox"/>	<input type="checkbox"/>			
My husband/ boyfriend doesn't like them	<input type="checkbox"/>	<input type="checkbox"/>			
Other (specify):	<input type="checkbox"/>	<input type="checkbox"/>			
No barrier	<input type="checkbox"/>	<input type="checkbox"/>			

Data sources

- WIC data system
 - Socio-demographic information
 - Child anthropometry
 - Nutrition & health risk indicators
- Project Data
 - Additional demographic questionnaire
 - KAP questionnaire
 - Stages of change algorithm
 - **WIC child diet & health history forms**

WIC child diet history form

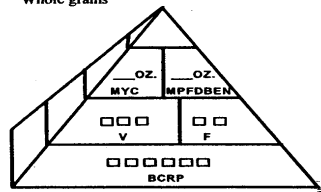
Please circle the foods your child ate last week.	DAY	WEEK
skim milk 1% milk 2% milk whole milk choc. milk cheese cottage cheese yogurt pudding custard frozen yogurt ice cream		
2 max. for 1-6 years, 3 max. for 7-10 years	(2-3)	/14-21
oranges tangerines grapefruit cantaloupe watermelon honeydew strawberries raspberries kiwi fruit orange juice grapefruit juice Juicy Juice®		
apple juice grape juice pineapple juice other juice apples applesauce grapes raisins pineapple cherries plums prunes peaches nectarines pears apricots fruit cocktail bananas mango papaya starfruit	/3	/21
	/4	/28
potatoes green peas corn hominy spinach kale collard greens broccoli carrots sweet potatoes yams winter squash green beans cauliflower cabbage celery zucchini cucumbers lettuce bell pepper tomatoes tomato sauce tomato juice V8 juice® mixed vegetables asparagus	/3	/21
	/5	/35
whole wheat bread rye bread oatmeal bread bran bread whole wheat crackers rye crackers graham crackers whole wheat pasta popcorn granola cereal bran cereal oatmeal cold cereal Malt-O-Meal® Cream of Wheat® noodles macaroni spaghetti other pasta rice white bread buns tortillas/tacos corn bread biscuits muffins quick breads French toast pancakes waffles pizza pocket bread/pita bagel saltines other snack crackers pretzels cake animal crackers cookies donuts Poptarts® sweet rolls	/5	/35
	/6	/42
pork and beans chili beans navy beans split peas lentils other dried beans chicken turkey duck pheasant tuna salmon shrimp other fish hamburger/ground beef steak stew meat roast chops ham pork lamb other ground meat liver heart kidney deer meat lunch meats hot dogs sausage brats eggs omelet other egg dishes peanut butter nuts seeds	/3	/21
Dietary Score	/21	
water coffee decaf coffee tea decaf tea herbal tea lemonade sport drinks HiC® Koolaid® Sunny Delight® pop diet pop		

Time	Food/Beverage	Amount

Recall based on: Yesterday Typical Day

Recommended minimum servings/day

Meat, poultry, fish, dry beans, eggs & nuts	1-6 years 3 oz.	7-10 years 5 oz.
Milk, yogurt & cheese	16 oz. milk or equivalent	24 oz. milk or equivalent
Citrus, melon & berries	1	1
Dark green & deep yellow vegetables	1	1
Whole grains	3	3



Other Risk Codes Based on Intake (Circle all that apply)

	Child's Age (Child's age in years)		
	Age 1-3	Age 4-6	Age 7-10
91	≤8	≤7	≤7
92	≤10	≤9	≤8
93	≤15	≤15	≤15
94	< recommended # svgs/day based on frequency (see pyramid)		
95	< recommended # svgs/day based on recall (see pyramid)		
61	Vegan diet		
62	Highly restrictive diet		
66	Inappropriate feeding practices for children		
No risks found			

Summary

- Nutrition educators must provide practical information to improve parents' meal planning & food prep skills.
- Young children must be exposed to new foods to develop sound eating practices for the future.